

The Influence Of The Use Of E-Book And E-Learning Base In Students Achievement

Supratman

*Mathematics Education Courses And Pedagogy Faculty Of Education
University Of Siliwangi Tasikmalaya
Siliwangi no. 24 Tasikmalaya e-mail: Supratman_Id@yahoo.com*

Abstract

One of way to increase the students achievement of mathematics departement Siliwangi Univercity of Tasikmalaya, net to development of learning model e-book and e-learning basic in analytic Geometry Learning. It is based on the result of students' study for analytical Geometric cis is not maximum. So, hopefielly if the result of analytical Geometric learning increase, the students' achievement will increase too.

This observation, e-book and e-learning basic in Geometric analytical, is to develop thr learning model, increase the students' achievement of mathematic department and analysis students responses in using of this models.

The conclusion is that the development of e-book and e-learning model in analytical geometric implementation can increase the students achievement and the responses of mathematics students of Siliwangi Univercity in Tasikmalaya is positive.

Key words : electronical book and electronical learning

I. INTRODUCTION

1. Background and Problem identification

Interactive media can be presented in the classical way by the lecturer or used by students in order to learn autonomously. The learning process by using computer allows students to participate actively and responsible for learning. The students are no longer bound by the monotonous presentation of material that must be studied from beginning to end systematically. Students can actually choose their own material that he wanted by being given the multiple options that will bring them into the material in question.

Linked with the development of learning problems in the study program of mathematics education at the University Siliwangi of Tasikmalaya, until now not all lecturers use computer-based learning, some teachers are still learning in the conventional. With regard to these issues is deemed necessary to develop computer-based learning model.

Based on the problems which have been described, it was agreed to develop computer-based learning model as an effort to improve the quality of the learning process and improve student learning achievement of mathematics education

students. Learning achievement of student embodies *the output* of a process that can not be separated from *the input* process.

2. Problem Formulation

These three problems are formulated as follows:

- a. Can the implementation of e-book and e-learning -based learning model in Analytic Geometry learning improve learning achievement of Students of mathematics education?
- b. Can implementation of e-book and e-learning based learning model in Analytic Geometry learning enhance the learning activities of Mathematics education students?
- c. How is mathematics education student responses on the Implementation of computer-based learning model in learning analytical geometry

3. Research Objectives

The purpose of the study: The purpose of the development and implementation of development result programs. The purpose of development is related to the product which was produced, while the purpose of implementation is the goal to be achieved after the product of development result is applied in mathematics learning process.

3.1. Development goals

- 1) Develop a computer-based learning model consists of: Clues, theories, learning, practice; exam
- 2) Validate the structure and feasibility of the computer-based learning model

3.2. Implementation goals

- 1) Increasing the learning achievement of students of mathematics education through Implementation of computer-based learning model in Analytical Geometry learning
- 2) Describe the activity of mathematics education student in the process of Implementation of computer-based learning model in Analytical Geometry learning

II. LITERATURE REVIEW

1. The use of Computer-Based Learning Model in Analytical Geometry Learning In learning of interactive mathematics, teaching materials is made in special design, so that the interaction between the student and the computer take place in dynamized

and stimulus response. Computer provide the opportunity to students to present input responded by computer, or viceversa. In the next process, the response can be made as new stimulus so it enable to have further response which will strengthen student memory in the concept that is being presented. *Input* of the program can be created in various ways, so that it can focus on the achievement of the learning. When students make errors in operating computer, it can explain and guide the students toward completion.

Based on the opinion, using computer-based learning model in this study was initiated by preparing materials that will taught through electronic book (*e-Book*) and electronic learning (*e-learning*). Every student can access the electronic books (*e-book*) and *e-learning* is given the opportunity to review the information in it.

The beneficial gained from the lectures by using the computer-based learning model are as follows:

- 1) Increase student motivation, because every student is free to choose the material and exercises in accordance with the wishes and abilities.
- 2) After evaluation, lecturer and students know very well in which material the students have been successful, and in which materials the students have not been successful.
- 3) Students achieve learning outcomes according to his ability.
- 4) The material is available for one semester, so students can study classically, individually, in a group. the learning process may be accompanied by lecturer or autonomous learning.

2. Learning Theory that supports the use of computer-based learning model in Analytical Geometry learning.

Learning theory that supports a.o: learning theory of Ausubel, theory of Vigotsky, theory of J. Piaget and learning theory of Bruner

3. Learning Tools

In this section, it is explained consecutively on the subject of research, research design, research procedure, research data, research instruments, data collection techniques, and data analysis techniques



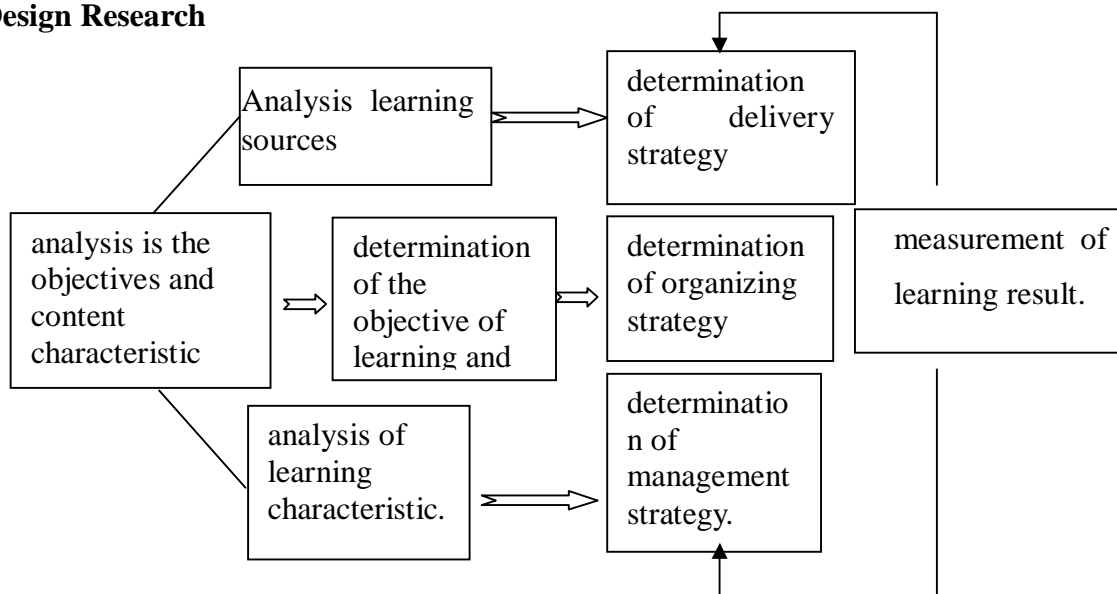
III. RESEARCH METHOD

1. Research subjects

Research subjects in this study were all students of mathematics education Faculty of Educational sciences and teacher`s training (FKIP), Siliwangi University in Tasikmalaya class C academic year 2008/2009, which amounts to 40 students. Besides that, there are 3 people as test subjects individually, and 8 people as a test group subjects.

The implementation of e-book and e-learning based learning model was pattern of Classroom action research

2. Design Research

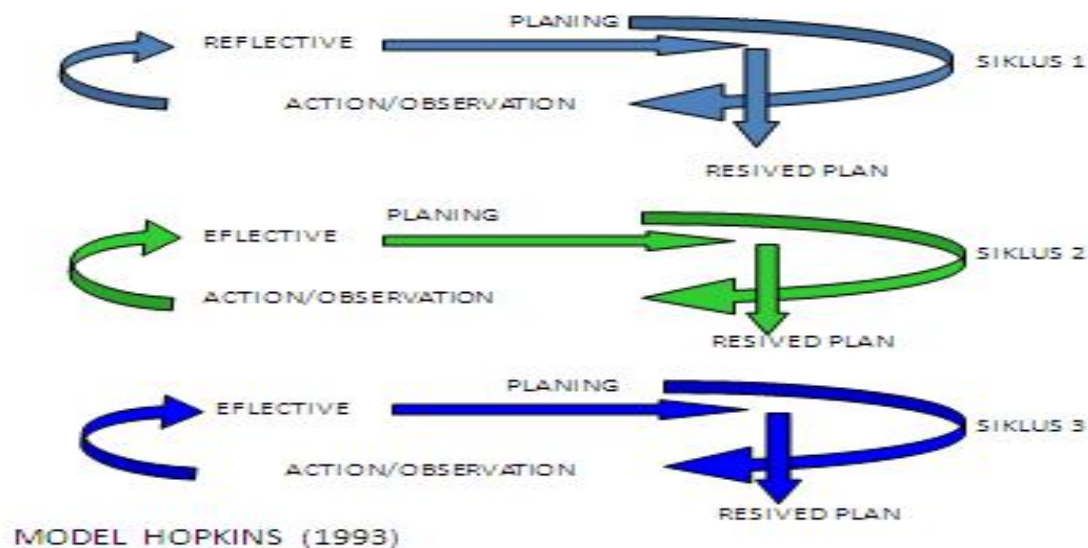


3. Research Procedure

The procedure of this study is divided into two types (1) procedure of product development of computer (e-book and e-learning) and testing-base learning model (2) Procedure of product implementation. The procedure of development of computer (e-book and e-learning) based learning model following the Degeng model,

INS (1997) and procedures for implementation of the product in learning following the pattern of Classroom Action Research

Research design of Classroom Action



3.1. Procedure of Development

Determination of the subject matter which is developed, analyzing the needs, developing e-book and e-learning-based model learning, arranging the draft of computer-based learning models, and expert review and testing.

The expert review consists of four stages namely; (1) expert evaluation of learning contents, (2) individual trials, (3) trial group, and (4) field trials consisted of trials and trial classroom lecturer.

Expert review of learning contents is intended to receive data in the form of judgments, opinions, comments, and suggestions from the expert of field of study / learning content to the overall learning material existing in the draft of computer-based learning model in materials of Analytical Geometry.

Having been evaluated by experts on the learning content, in the next step the draft is evaluated by media experts in analytical geometry learning.

Having been evaluated by expert on the content, and expert of learning media, all draft of computer-base learning model in the subject of analytical geometry is conducted revision 1. Responses, comments and suggestions of experts is used as the basis for the revision 2, which then produce a draft II.

Draft II and then is tested to three students, each student represents the student who has high, medium, and low ability. The purpose of this trial was to identify and discard the existing fault errors on the third draft, including typing errors, the mistake in using language, and terminology, the use of letter which does not fit, obtain input and comments on the contents of computer-based learning model on the matter of analytical Geometry. Draft III is then tested on a group of eight students, three people have high ability, two people have the medium capability, and 3 people have low ability. This test resulted in draft IV.

Draft IV used for field trials. The trial is aimed at users of the product of computer-based learning model, which is divided into two activities, namely testing of lecturer and class testing.

3.2. Program Implementation Procedure

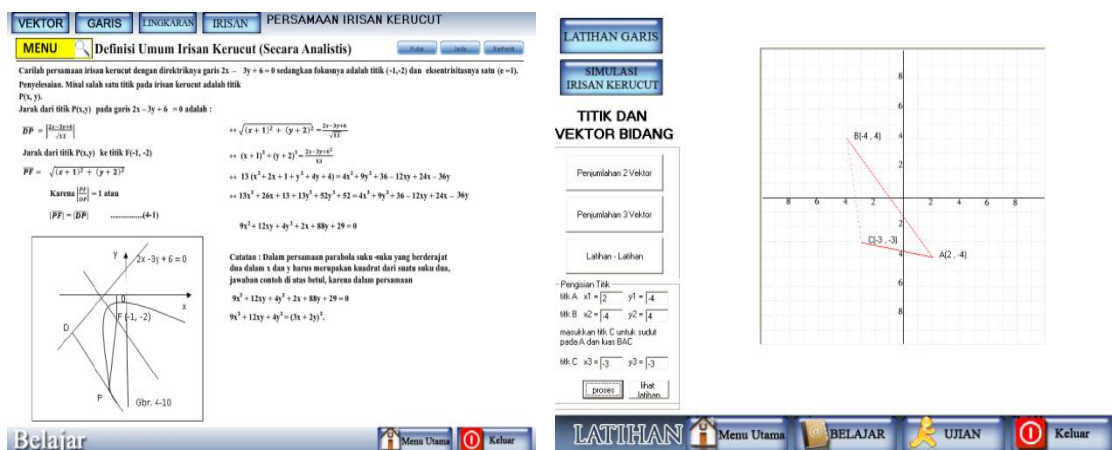


Figure existing programs in e-book

3.3. Observation

3.4. Reflection

Reflection was conducted three times that is at the end of the cycle I, at the end of cycle II and At the end of cycle III. The purpose of this reflection is to improve the next learning for optimal results.

4. Data Types

The data used in this study are two kinds, differentiated by its aspect namely aspects of function and nature.

5. Research Instruments and Data Collection Techniques

The instrument used in this study consisted of observation sheet. Questionnaire and test instrument are used in the process of development of Computer-based learning model using class action research questionnaire consists of five kinds, namely (1) a questionnaire for the expert of content, (2) a questionnaire for the expert of the media, (3) questionnaire for individual trials, (4) questionnaire for the group testing , (5) a questionnaire for test of lecturer.

6. Data Analysis Techniques

To determine the increase in student learning achievement at Mathematics Education FKIP UNSIL Tasikmalaya seen from the average score obtained for each circle to know the increase of activity, the success criteria it was happened the learning activity changes which was originally centered on the lecturer turned into the student activity in the response in learning. To know the students' response, the success criterion is a comparison of the percentage of response score of 4 and 5 is greater than the response score of 1 and 2, respectively on a scale of 5.

IV. RESULTS AND DISCUSSION

The results of research reported consist of two main points, namely (1) the result of development and (2) the result of implementation of computer-based learning model in Analytic Geometry learning through classroom action research.

1. The results of the development

1.1. The assessment analysis results of expert on content of learning materials.

The expert of learning material content responded to 15 statements, which developed in this research. The result of research analysis on the content of the material, about the accuracy of placement, appropriate, appropriately enough, the placement of sub-subject has been placed in accordance with the its sequence, the clearness of contents is very clear so that it makes easy for student to learn the material that had been prepared, the students just choose which material they want to study.

1.2. Evaluation analysis results of media expert.

The analysis results of expert of the media as follows: media, picture presentation, in accordance with the material, appropriate because the media is made based on

materials that must be mastered by students. Serving the picture represents the concept embedded, very appropriate because in each concept there is images that contain the concept. The attractive image presentation, it is appropriate because the image using animation , the image presentation is relatively attractive, it is appropriate because it seems intentionally to be made attractive to make students interested to learn it.

1.3. Results of data Analysis of Individual and Group Assessment

1.4. Results of data Analysis of Class trial assessment

For class trial, it does not use questionnaire, but directly to the questions about the 1 point and vector materials. The student were asked to study the material that has been

Prepared and given test to the 38 students with three numbers of questions. The form of question is essay with each score: for the no. 1 the score is 30, no, 2 score is 35 and for no, 3 the score is 35. The average score obtained by students is 65.80. This has shown the presence of an increase in the average scores of students who originally 64.75.

2. Result of Implementation

2.1. Description of Student Learning Outcomes, Cycle I

It was gained an average of 65.88 with a standard deviation of 5.98. In order to have the same reference, it was used Assessment of benchmark reference (PAP) in order to obtain average mean 50 and standard deviation of 16.67. based on student PAP, the student who obtain marks B are 36 students, this means that 99% of students scored B. A total of 4 students earn a grade of C, this means that 10% gain C. No single mark of any student who obtained an A, D, and E, Thus, all students passed.

2.2. Reflection of Cycle I

Based on the learning process and student learning outcomes acquired, All the observer and the writer gathered to discuss the findings during the learning process is going on, the reflection need to be done to plan the next action, so that the cycle II can get optimal results.

The results of these reflections are as follows:

- a. The presentation should be done by the student after carrying out the exercise, with the Intention that students who do not understand the material can get input from other students.
- b. The lecturer should give discussion, as facility lecturers have obligatory to facilitate students who do not understand and know how to solve the problem.
- c. So far, the Lecturers is less engaged in learning process, in fact that a lecturer has prepared the material as good as possible before the process of learning begins.

2.3 Description of Student Learning Outcomes, Cycle II

It was gained an average of 70.13 with a standard deviation of 6.93. In order to have the same reference, it was used the assessment of benchmark Reference (PAP) in order to obtain the average mean 50 and standard deviation of 16.67. Based on PAP, students who obtain A value were 6 people, the value of B as many as 32 people, the value of C were 2 people, This means that 15% of students gets A grade, 80% received grades of B and 5% Obtaining the value of C. There is no student who obtained the value D and E, thus all students passed, and there is an increase from an average of 65.88 in cycle I to 70.13 in cycle II. This means that there is an increase of 6.45% seen from the average.

2.4 Reflection of Cycle II

In this second cycle has been an increase in student learning outcomes by 6.45% based on the average results of learning. That learning result is still necessary to be increased, that is why after the test cycle II, observer and writer implemented the reflection with the outcome as follow:

- 1) Student activities who active category, there has been a change of values that was obtained. In I cycle I, there was no student who obtained an A value, while the second cycle there are 6 students, who obtained an A value.
- 2) Lecturer has established its role as facilitator, mediator and a good decision maker, therefore it is expected that the learning outcomes of student in cycles III optimal.

2.5. Description of Student Learning Outcomes Cycle III

It was gained an average of 78.25 with a standard deviation of 5.72. In order to have the same reference, it was used Benchmark Reference Assessment (PAP) to obtain an average of 50 and standard deviation of 16.67. Based on PAP, students who earn A value as many as 22 people, the value of B as many as 18 people, there is no student who obtained the value C, D, and E, this means that 55% of students received grades of A, 45% get a B, thus all students passed, and there is an increase from an average of 70.31 in the second cycle to becomes 78.25 in cycle III. This means that there is an increase of 11.58% seen from the average.

2.6. Reflection of Cycle III

In the third cycle has been an increase of student learning outcomes of 11.58% based on the average results of learning. That result of study is quite satisfactory either for student or for lecturer, but the reflection is still needed. Therefore, after the test cycle III the results are as follows:

- 1) Students are accustomed to using *e-book* so that the results is satisfactory, therefore this practice should be maintained.
- 2) Students who do not have internet access must be facilitated so that the result is optimal. If the learning outcomes is optimal, the academic achievement of student will increase,.

3. Recapitulation of learning Results Implementation

Based on the learning process in the cycle I: all students passed, but there are still students who earn a grade of C as many as 4 people and no student who obtained the value of A. In the second cycle there is increase, there are 6 people who get an A value, and the number of student who get C value decrease to become 2 people, in cycle III all students passed with an increase increases in value to become 22 people who get Value of A, and the student who get B value 18 people, there was no student who get C value.

4. Recapitulation of Student Activities

Recapitulation of the value of student activities as follows:

Recapitulation of students learning activities value

No	Aspects of the observed	Cycle I			Cycle II			cycle III		
		A	C	K	A	C	K	A	C	K

1	Interaction between Student		40%		40%			40%		
2	Student Interaction with lecturer / assistant	20%				15%				5%
3	Ability to Ask		10%			15%		15%		
4	The ability to respond		15%		15%			20%		
5	Ability to express opinions			15%		15%		15%		

Based on data in Table 5.5, there is increased interaction between students that occurred in cycles I of 40% of students interact quite active, then the interaction between students in the cycle II, there are 40% of students are actively interacting, and in the third cycle, the interaction between student activity increased to 45%. Interaction of students with lecturer / assistant in the cycle I cycle as much as 20% active. In cycle II decreased to 15% moderately active, and the cycle III, there are 10 % still interacting with the lecturer / assistant, but less active, this shows the interaction between students and lecturers / assistant to decline, this means that other activities increased.

The student's ability to ask in cycle I indicated 10% less active and in the cycle II increased moderately active 15%. The ability to respond in the cycle I has 15% of students are quite active, in cycle II, rising to 15% of active students, and in the third cycle students are actively responding to 20%. The ability to express opinions in the cycle I 15% of students are less active, and in the second cycle students are quite active as much as 15% and in the third cycle students involved actively to express their opinions as much as 15%.

5. Recapitulation of student responses

To know the response of students at mathematics education toward the use of computer-based learning model in Analytic Geometry learning by providing a questionnaire containing 10 statements

Recapitulation of Student Response

No	Statements	Sf	A	R	Ti	STS
1	Learning at laboratory of computer is interesting	50%	30%	-	20%	-
2	I was motivated to learn because the material could be selected by my self	60%	20%	-	20%	-
3	I get further understand by this kind of learning.	70%	20%	-	20%	-
4	At home I could not open the e-book and e-learning	40%	20%	-	40%	-

5	These inter active image did not make me boring to learn.	60%	20%	-		20%
6	The material is interesting dish	70%	20%	-	10%	-
7	Exercise makes more spirit because the results can be equated with the answer key	60%	20%	-	-	20%
8	I Prefer to study accompanied by lecturer or assistant because I can ask directly.	40%	20%	-	-	40%
9	I am motivated to do the task because it can be sent directly to lecturer blog .	60%	20%	-	20%	
10	Besides understanding analytic geometry in the same time I can improve to operate computer.	70%	20%	-	10%	

Information”:

Sf : solid for, A : agree n ; neutral ti: take issue sts:

Based on data in the table above it can be concluded that the response of mathematics education students against the use e-book and e-learning based learning model in Analytical Geometry learning is positive

6. Discussion

Learning achievement of students is appointed by the increasing student learning outcomes from Cycle I to cycle II increased 6.45% and from cycle II to cycle III increased 11.5%. it can be seen that in the cycle I all students passed, but there are still students who scored C as many as 4 people and no one student received grades A. In the cycle II, there is increased, there are 6 students got an A and there are 2 people who get value C. in cycle III, all of student passed and there are as many as 22 people who got A, 18 people who get B , and there is no student who scored C.

There is an increase in student learning activities based on the observation of two observers, who observe the implementation of learning start from Cycle I to Cycle III.

The response of students to use computer-based learning model in Analytic Geometry learning is positive. This is show with 50% of students strongly agreed learning in computer labs and 30% agreed. The student is motivated to learn because the material can be individually chosen by 60% strongly agreed and 20% agreed. The student get better understanding with computer-based learning 70% strongly agreed and 10% agreed. The student claiming the house could not open the CD of learning, 40% strongly agree there are a lot of students do not have their own computer. The interactive images according to students 60% strongly agreed to make learning not to

get bored. According to 70% of students strongly agreed that the presentation is interesting. According to 60% of students strongly agreed that the exercise makes more spirit, because the work can be equated with the key answer. 40% of students strongly agreed if learning was accompanied by a lecturer / assistant because they can ask directly to the lecturer, and the other are not agree. This means that students prefer to learn on their own using the learning CD. as many as 60% of students strongly agreed that they were motivated to use these tasks because it is directly sent to the Blog of the Lecturers. According to 70% of students strongly agree that besides understanding the Analytical geometry as well as improving to operate the computer.

V. CONCLUSION AND SUGGESTIONS

This section is presented successively on the conclusions of research results and suggestions based on research results.

1 Conclusion

First, implementation of computer-base learning model in Analytic Geometry learning improve learning achievement of students of Mathematics Education , faculty of educational sciences and teacher`s training, Siliwangi university of Tasikmalaya

Second, implementation of computer-base learning model in Analytic Geometry learning can enhance the activity of students in Mathematics Education , faculty of educational sciences and teacher`s training, Siliwangi university of Tasikmalaya.

Third, the responses of students of mathematics education, faculty of educational sciences and teacher`s training, university of Siliwangi. Tasikmalaya is positive to the use of computer-based learning model in Analytical Geometry learning.

2. Suggestion

In order that the product of Computer-based learning model in Analytic Geometry learning is effective, it should be considered the following matters:

- 1) e-book and e-learning of computer-base learning model in Analytic Geometry learning should be used optimally by the students so that learning achievement of students optimal.
- 2). Lecturer of the subject matter should be ready to be contacted by students individually If students have difficulty in doing practice questions or tasks, because each individual would have a different difficulty.

- 3).To the researchers further recommended to develop a model of computer-based learning on the other subject beyond that Analytic Geometry subject in order, students have choice in learning, using the interactive media.

BIBLIOGRAPHY

Books :

- [1] Arsyad Azhar. *Media Pembelajaran*. P.T. Raja Grafindo Persada. Jakarta: 2007
- [2] Degeng, *INSModel Desain Pembelajaran*. Malang : IKIP Malang. 1997.
- [3] Depdiknas, *Teori Belajar*. Jakarta : Depdiknas(2005
- [4] Fey, J. Dan Heid, M. K.. *Imperatives and possibillities for new corricula in secondary Scholl mathematics dalam Computers in mathematics education (year book) . hansen, V.P. and Zweng, M.J. (editors)*. Reston, Virginia: National Council of teachers of mathematics, Inc. 1984
- [5] Flether, T.J. *Microcomputers and mathematics and schools, United Kingdom: Department of Education and Scince*.Heinich, R. (1996). *Instructional Media and Technology for learning*. New Jersey: Prentice Hall, Inc. 1988
- [6] Kaput, J. J. *Technology and matematics Education in Grouws, D. A. (Ed), handbook of matematics Teaching and learning*. Resto, Virginia : *National counsil of teachers of matematics*: Hillsdale ; H.J: Lawrence Erlbaum. 1992.

Research

- [7] Kusumah, Yaya. S. *Desain dan Pengembangan Courseware Berbasis Komputer dalam Implementasi E-learning Matematika untuk meningkatkan kemampuan matematis dan kemampuan berpikir kritis siswa SMA*. Laporan Penelitian Hibah Bersaing Nasional 2006. Jakarta :DP2M, Dikti-Depdiknas, 2006
- [8] Kususmah, Yaya. S. *Konsep, Pengembangan, dan Implementasi Komputer-Based learning dalam peningkatan kemampuan High-order Thinking*. Pidato pengukuhan Jabatan Guru Besar tetap dalam bidang Pendidikan Matematika pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam Universitas Pendidikan Indonesia : 23 Oktober 2008.
- [9] Suryana, Ana *Efektifitas model pembelajaran matematika interaktif berbasis media komputer*. Thesis UPI Bandung 2006

On line

- [10] Kulik, J.A, et.al *Effectivennes of komputer-Based Education in Elementary School*. available : <http://www.nwerl.org/scpd/sirs/5/cu10/html>[29 January 2004
- [11] Wannoormahzira. *Pembelajaran Berbasis Komputer*. available in http://www.geocities.com/wannoormahzira/kajian_pp4.html. 2001